pitney bowes

GeoVision™ Australia Tree Risk

2018.04

Product Guide

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Feedback
Pitney Bowes welcomes your comments and suggestions. For further details, refer to **Appendix B: Data Support and Feedback**.

July 2018

1 – Product Description

1

Welcome to the **GeoVision™ Australia Tree Risk** Product Guide. This document is intended to assist you in gaining maximum benefit From **GeoVision Australia Tree Risk**, by providing a detailed insight into the datasets and associated files that make up the product. Pitney Bowes strives to be responsive to the evolving and growing utility of this data product within numerous and wide-ranging types of organisations. We encourage any feedback and suggestions that will assist us in developing the best possible dataset for your business requirements (refer to Appendix B: Data Support and Feedback).

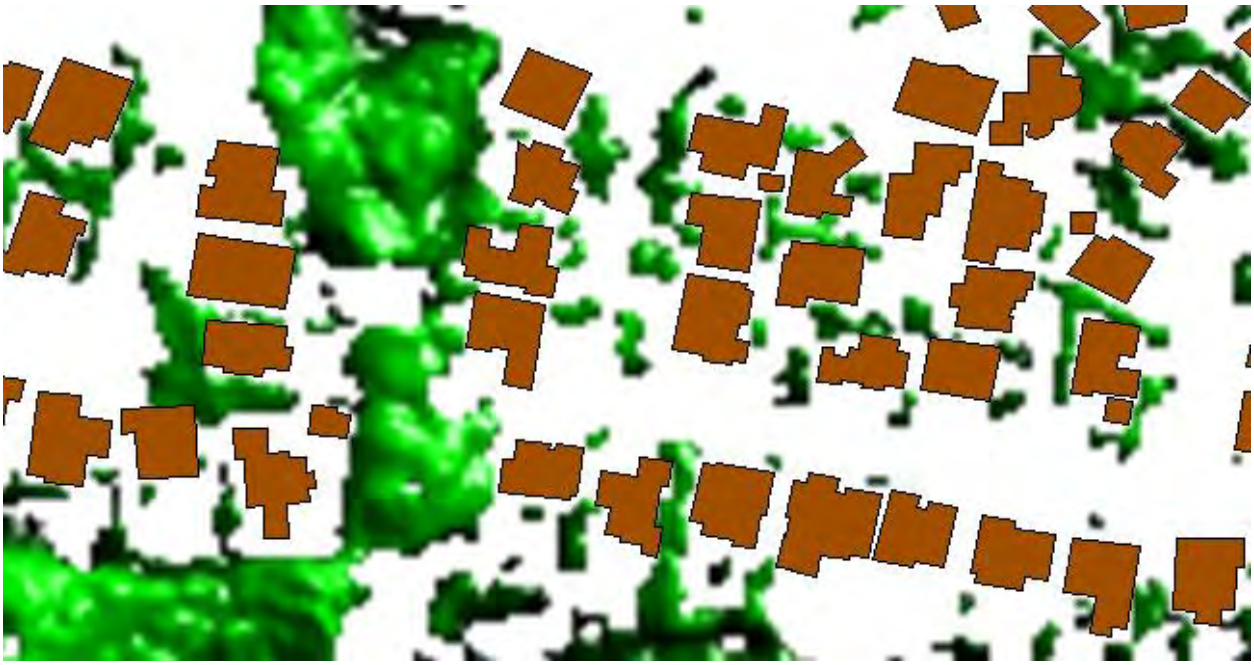
Product Overview

Pitney Bowes GeoVision™ is a value-added version of PSMA's Geoscape® product, designed to simplify and enhance the experience of using this nationally important new dataset.

The GeoVision Tree Risk data provides a simplified indication of the risk that proximate trees cause to the integrity of buildings, particularly during high wind events. The risk data is derived from a combination of building footprints and raster tree cover data. The model incorporates the following factors:

- The height of each tree
- The distance of each tree from a building
- The number of trees that may affect a building
- The direction each tree would need to fall to affect a building.

Note that trees do not respect property boundaries and the same tree may affect one or more properties or buildings.



GeoVision Australia data: Building footprints and 2m Trees raster data

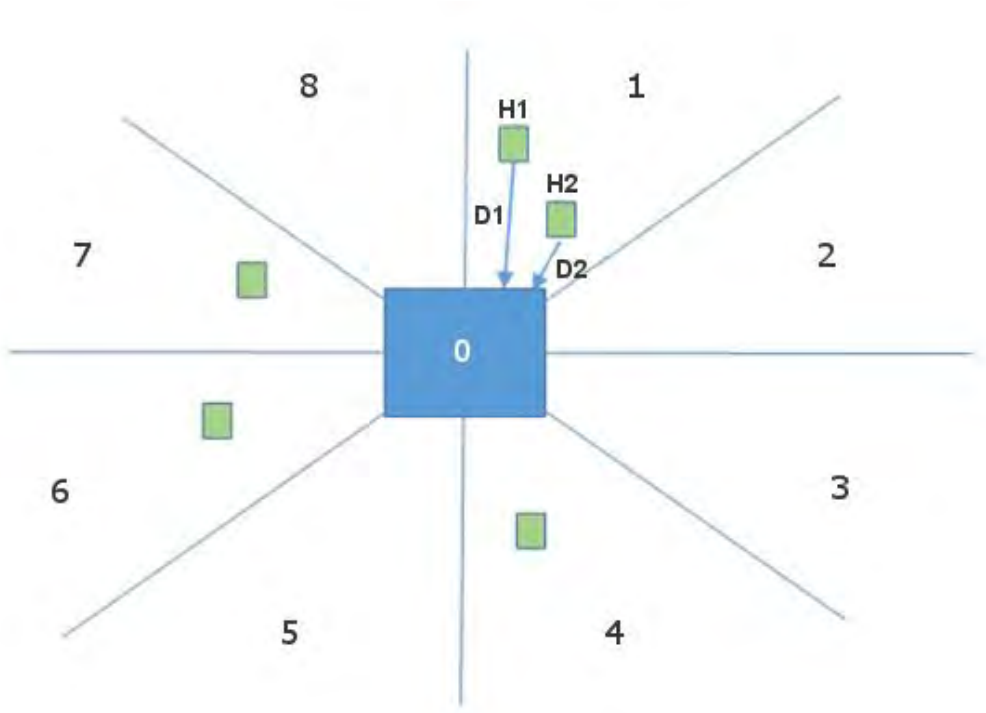
For simplicity, the following assumptions are made:

1. That each 2 x 2 metre pixel in the TREES raster layer is representative of a tree, capable of falling in any direction
2. That the base of the tree is the same height as the base of the building
3. That if a line is drawn at 45 degrees from the base of the building then no pixel lower than that line can affect the building
4. That the tree will fall on the closest point of the building

It can also be assumed that:

1. A tall tree falling close to a building will cause more damage than the same tree further away – i.e. the risk for trees of the same height is inversely proportional to their distance from the building
2. The damage caused in a tree fall is proportional to the tree height – i.e. the risk from trees of different height at the same distance from a building is proportional to the height of each tree.

The diagram below shows how the tree pixel data is related to the building polygons. The blue rectangle represents a building footprint. The green squares represent raster pixels indicating tree height.



The risk has been divided into nine octants. Octant 0 references all grid cells whose centroid is above the building's roof. The surrounding area is split into octants 1 to 8.

H is the height of each pixel above the ground.

D is the distance to the building.

The risk that trees pose to the building can then be calculated for each octant, for each building:

Tree Risk Factor 0 = $\sum H$ Where Height > 3 metres

Tree Risk Factor 1 = $\sum H/D$ Where H/D >1 and Height > 3 metres

Tree Risk Factor 2 = $\sum H/D$ Where H/D >1 and Height > 3 metres

…

Tree Risk Factor 8 = $\sum H/D$ Where H/D >1 and Height > 3 metres

Please note, the following factors may also affect the risk to a building from trees, but are not presently considered as part of the model:

1. The elevation of the base of each tree relative to the building
2. The species of tree
3. The age of the tree and its health
4. The girth of each tree trunk
5. The size of the canopy and lateral branches.

2 – Layer Descriptions

2

This chapter lists the layers provided with GeoVision™ Tree Risk and describes their structure and content.

In this Chapter

GeoVision ™ Tree Risk Data Model

GeoVision Tree Risk contains two layers (three in the stand-alone product), each with a range of information. The layers can be joined based on the unique BUILDING_PID value.

The layers are provided in text format (pipe-delimited), and can be viewed in a range of text or database applications, or opened directly into MapInfo Professional.

Aggregated Tree Risk Factor

The Aggregated Tree Risk layer contains the aggregated risk for each building, from each octant. Trees that are inside the building polygon are not included in this table.

Field	Description
BUILDING_PID	Identifier for building polygon
TreeRiskFactor_1	Risk for octant 1
TreeRiskFactor_2	Risk for octant 2
TreeRiskFactor_3	Risk for octant 3
TreeRiskFactor_4	Risk for octant 4
TreeRiskFactor_5	Risk for octant 5
TreeRiskFactor_6	Risk for octant 6
TreeRiskFactor_7	Risk for octant 7
TreeRiskFactor_8	Risk for octant 8

Raw Tree Values

The Raw Tree Values is a collection of information about each tree pixel, and its relationship to buildings.

Field	Description
TreeID	Identifier for tree location
BUILDING_PID	Identifier for building polygon
Octant	Octants 0-8, location of tree pixel relative to the building
Height	Height of tree pixel in metres
Distance	Distance to building in metres
Bearing	Bearing of tree in relation to building
ImpactOnBuildings	Number of buildings this tree may impact

Building Address Details (GEOVISION_ADDR)

(Available in stand-alone GeoVision Tree Risk only)

The Building Address Details dataset is a list of address information associated with each building affected by trees. This data is a non-mappable subset of the BUILDINGS_ADDR layer from GeoVision Australia.

Field	Description
BUILDING_PID	Identifier for building polygon
GNAF_PID	G_NAF Primary Identifier (unique)
BUILDING_NAME	Name of building
SEARCH_ADDRESS	Full street address, including unit number and number range where applicable (eg Unit 1, 75-79 Jersey Street N)
ADDRESS_TYPE	Type of address (eg house, lot, urban, rural)
LOCALITY_NAME	Locality name (eg. South Brisbane)
POSTCODE	4-digit postcode. Postcodes are optional as prescribed by AS/NZS 4819-2011 and AS 4590-2006.
STATE_ABBREVIATION	State abbreviation: ACT – Australian Capital Territory NSW – New South Wales NT – Northern Territory OT – Other Territories (including Jervis Bay, Cocos and Keeling Islands) QLD – Queensland SA – South Australia TAS – Tasmania VIC – Victoria WA – Western Australia
MESHBLK_2011	Mesh Blocks (2011 currency) - micro-level geographical unit for statistics.
MESHBLK_2016	Mesh Blocks (2016 currency) - micro-level geographical unit for statistics.
MESHBLK_CATEGORY_CODE	The category of land use allocated to mesh block (2011 currency). • Agriculture • Commercial • Education • Hospital / Medical • Industrial • No Usual Residence • Parkland • Residential • Shipping • Transport • Water • Other • Antarctica • Migratory • Offshore
SA1_2011	Statistical Areas Level 1 (2011 currency). The SA1 boundaries are derived from the 2011 mesh block boundaries and form

	part of the 2011 Australian Statistical Geography Standard (ASGS).
SA1_2016	Statistical Areas Level 1 (2016 currency). The SA1 boundaries are derived from the 2016 mesh block boundaries and form part of the 2016 Australian Statistical Geography Standard (ASGS).
AREA_TYPE	Indicator of type of area category DU = Dense Urban U = Urban RU = Rural Urban R = Rural
PARCEL_ID	Generic parcel id field to be used where custodial data provides such. Although the PARCEL_ID field is accurately represented when populated, coverage for the whole of Australia is not complete. It is not recommended that any cross referencing is undertaken to correlate with CadLite's jurisdiction_id field.
PROCESS_TYPE_CODE	Processing value indicating reliability of association between the building and an address record. See code values below.

PROCESS_TYPE_CODE values for ADDR table

Process type code	Description
BA01	BUILDING polygon spatially contains exactly 1 building geocode ADDRESS feature. The BUILDING is associated with the 1 ADDRESS feature.
BA02	BUILDING polygon spatially contains multiple building geocode ADDRESS features. The BUILDING is associated with the multiple ADDRESS features.
BA03	BUILDING polygon spatially contains exactly 1 property geocode ADDRESS feature. The BUILDING is associated with the 1 ADDRESS feature.
BA04	BUILDING polygon spatially contains multiple property geocode ADDRESS features. The BUILDING is associated with the multiple ADDRESS features.
BA05	PROPERTY polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains exactly 1 property geocode ADDRESS feature. A single BUILDING is associated with the 1 ADDRESS feature.
BA06	PROPERTY polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains exactly 1 property geocode ADDRESS feature. Multiple BUILDINGS are associated with the 1 ADDRESS feature.
BA07	PROPERTY polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains multiple property geocode ADDRESS features. A single BUILDING is associated with multiple ADDRESS features.
BA08	PROPERTY polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains multiple property geocode ADDRESS features. Multiple BUILDINGS are associated with multiple ADDRESS features.
BA09	BUILDING polygon partially intersects a single PROPERTY polygon with 1 or more property geocode ADDRESS features. A single BUILDING is associated with 1 or more ADDRESS features.

BA10	BUILDING polygon spatially contains multiple PROPERTY polygons with 1 or more property geocode ADDRESS features. A single BUILDING is associated with multiple ADDRESS features.
BA11	PROPERTY polygon spatially contains 1 or more building geocode ADDRESS features allocated a BUILDING feature and 1 or more BUILDING polygons intersect PROPERTY polygon not allocated ADDRESS. Multiple BUILDINGS associated with 1 or more ADDRESS features.
BA12	ADDRESS has not been allocated a BUILDING. The BUILDING polygon area intersects by more than 10% a single PROPERTY polygon with 1 or more ADDRESS features allocated a BUILDING. A single BUILDING is associated with multiple ADDRESS features.
BA13	BUILDING not allocated an ADDRESS and BUILDING polygon spatially contains or intersects PROPERTY polygon that has an ADDRESS within 15 metres and the closest PROPERTY to the ADDRESS. A single BUILDING is associated with a single ADDRESS feature.
BA14	BUILDING not allocated ADDRESS and BUILDING polygon intersects with PROPERTY polygon with same PROPERTY_PID as PROPERTY polygon no more than 1km containing ADDRESS feature. A single BUILDING is associated with 1 or more ADDRESS features.
BA15	BUILDING not allocated an ADDRESS and PROPERTY polygon intersects with BUILDING polygon where PROPERTY polygon contains 1 or more gap geocode ADDRESS features. A single BUILDING is associated with 1 or more ADDRESS features.
BA16	CAD polygon contains or intersects greater than 80% with a single BUILDING polygon feature and spatially contains exactly 1 property geocode ADDRESS feature. A single BUILDING is associated with the 1 ADDRESS feature.
BA17	CAD polygon contains or intersects greater than 80% with multiple BUILDING polygon features and spatially contains exactly 1 property geocode ADDRESS feature. Multiple BUILDINGS are associated with the 1 ADDRESS feature.
BA18	CAD polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains multiple property geocode ADDRESS features. A single BUILDING is associated with multiple ADDRESS features.
BA19	CAD polygon contains or intersects greater than 80% with BUILDING polygon feature and spatially contains multiple property geocode ADDRESS features. Multiple BUILDINGS are associated with multiple ADDRESS features.
BA20	BUILDING polygon partially intersects a single CAD polygon with 1 or more property geocode ADDRESS features. A BUILDING is associated with 1 or more ADDRESS features.
BA21	BUILDING polygon partially intersects multiple CAD polygons with 1 or more property geocode ADDRESS features. A BUILDING is associated with multiple ADDRESS features.
BA22	CAD polygon spatially contains 1 or more building geocode ADDRESS features allocated a BUILDING feature and 1 or more BUILDING polygons intersect CAD polygon not allocated ADDRESS. Multiple BUILDINGS associated with 1 or more ADDRESS features.
BA23	ADDRESS has not been allocated a BUILDING. The BUILDING polygon area intersects by more than 10% a single CAD polygon with 1 or more ADDRESS features allocated a BUILDING. A single BUILDING is associated with multiple ADDRESS features.

BA24	BUILDING not allocated an ADDRESS and BUILDING polygon spatially contains or intersects CAD polygon that has an ADDRESS within 15 metres and the closest CAD to the ADDRESS. A single BUILDING is associated with a single ADDRESS feature.
BA25	BUILDING not allocated ADDRESS and BUILDING polygon intersects with CAD polygon with same CAD_PID as CAD polygon no more than 1km containing ADDRESS feature. A single BUILDING is associated with 1 or more ADDRESS features.
BA26	BUILDING not allocated an ADDRESS and CAD polygon intersects with BUILDING polygon where CAD polygon contains 1 or more gap geocode ADDRESS features. A single BUILDING is associated with 1 or more ADDRESS features.

Appendix A – Data Support and Feedback

Pitney Bowes continues to enhance the data support and feedback facilities available to our clients. An infrastructure has been developed to streamline the handling of customer feedback regarding data products and to ensure that appropriate responses are provided, with corrective action being taken where appropriate.

Feedback Process

The process is as follows:

1. **Completion of Feedback Form by Client:** A printed Data Feedback form is supplied with this product. There is also an electronic version of the same form on the product media. You can also email comments (and associated screenshots) directly to the following email address:
   software.support@pb.com

2. **Handling:** All customers are sent confirmation of receipt of email feedback, and then subsequently notified of the type and timetable of the corrective action (where appropriate). Dependent on the type of feedback, the report may be actioned immediately or scheduled for routine maintenance action as part of the next scheduled release. The Feedback Database keeps track of progress on each item. Follow-up action and advice are provided wherever necessary.